6393002

FIG. 1

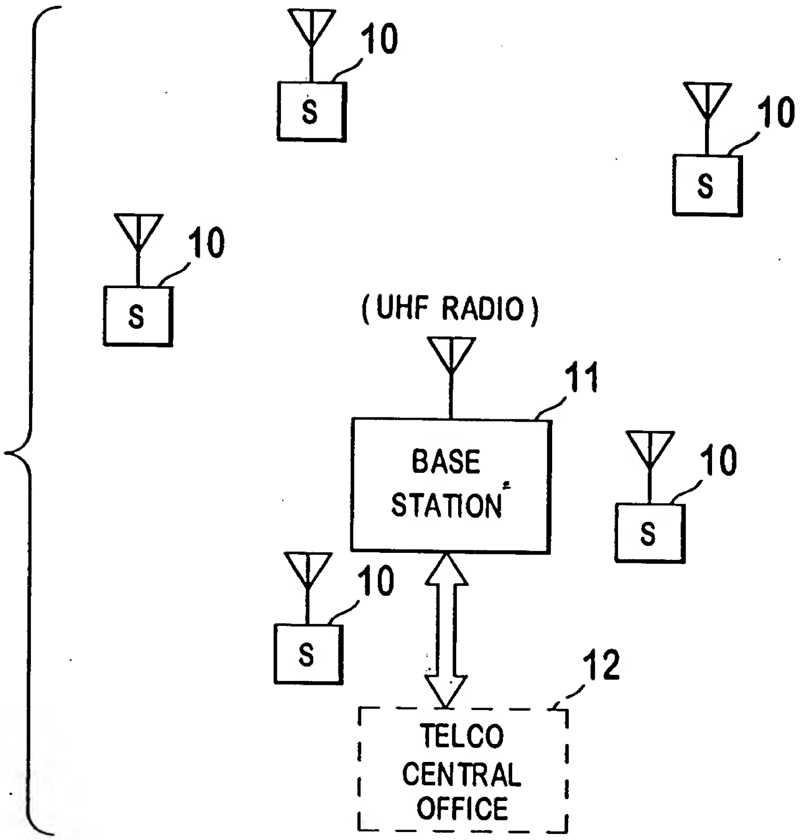
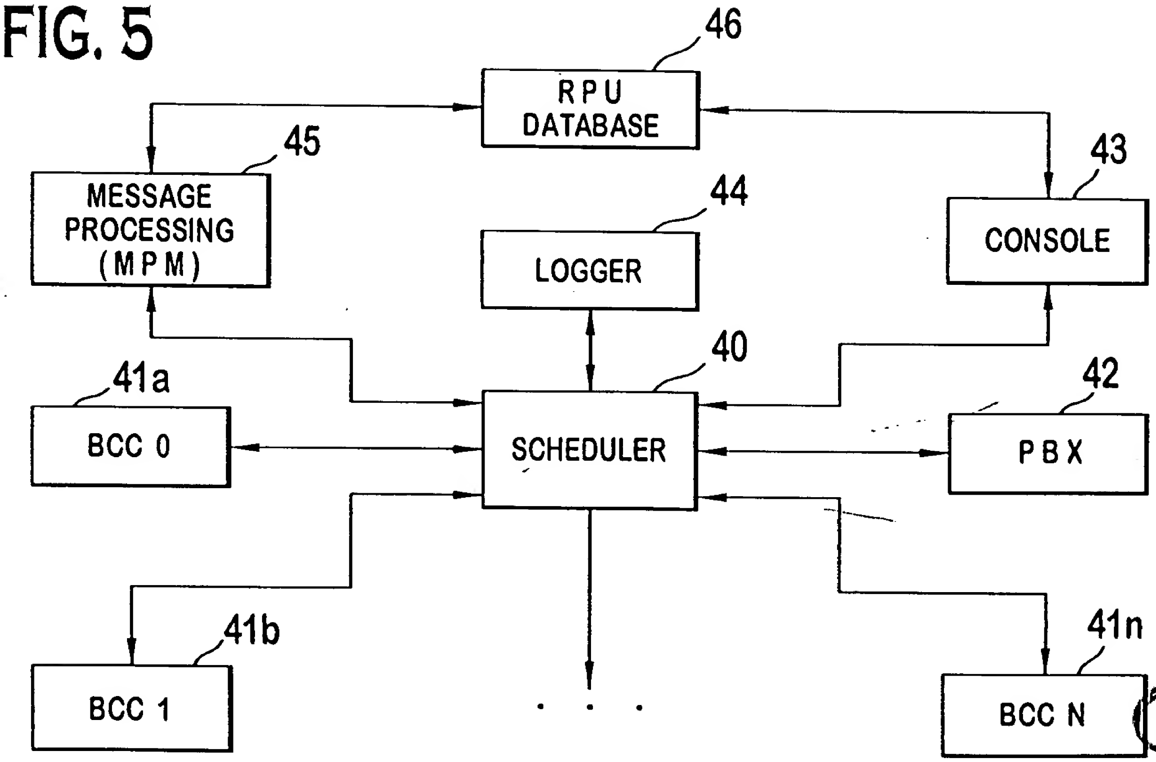


FIG. 5



39

FIG. 2

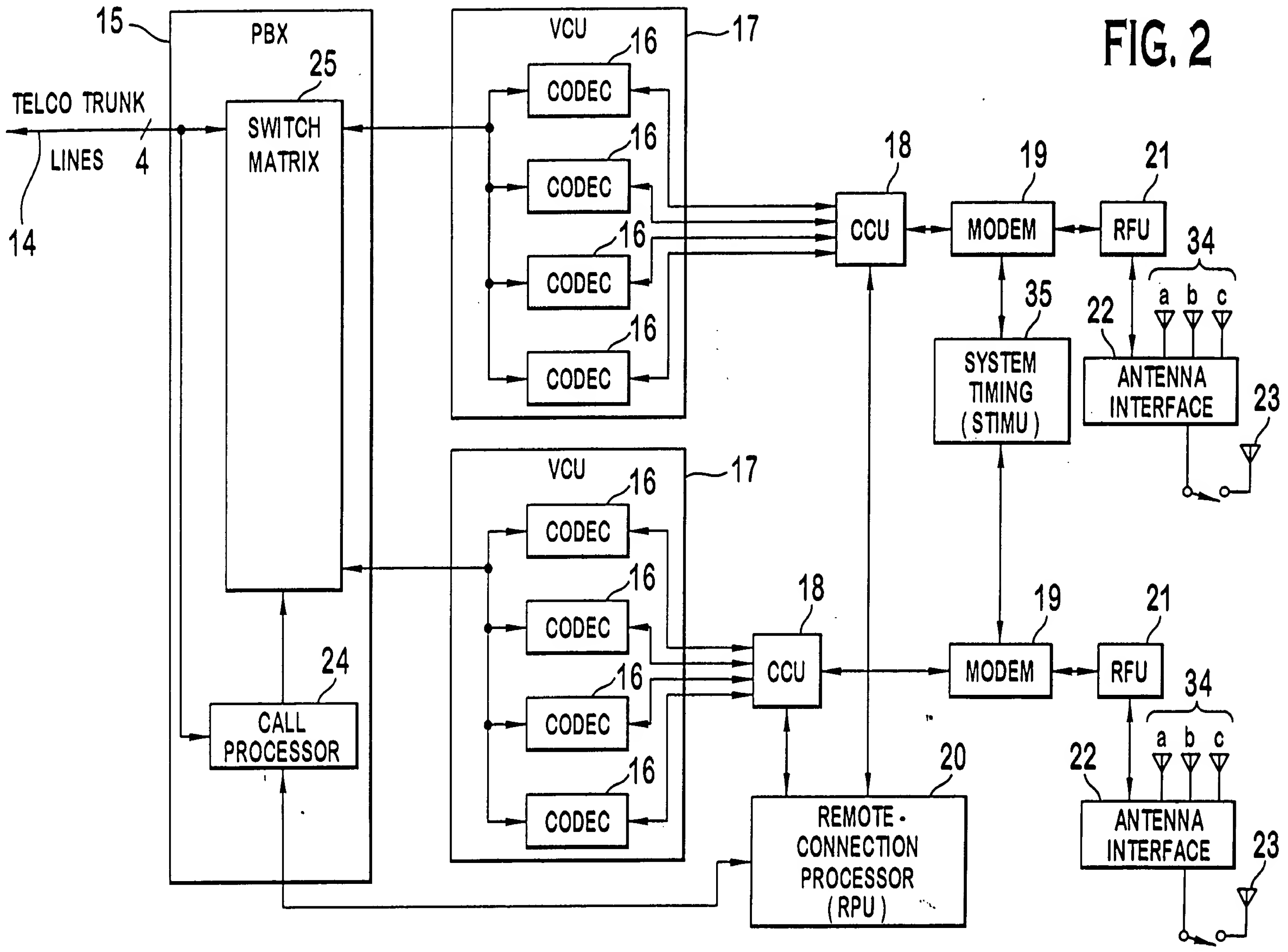

15
PBX
25
SWITCH MATRIX
TELCO TRUNK LINES
4
14
24
CALL PROCESSOR
VCU
17
16
CODEC
16
CODEC
16
CODEC
16
CODEC
VCU
17
16
CODEC
16
CODEC
16
CODEC
16
CODEC
18
CCU
18
CCU
19
MODEM
19
MODEM
35
SYSTEM TIMING (STIMU)
20
REMOTE-CONNECTION PROCESSOR (RPU)
21
RFU
21
RFU
22
ANTENNA INTERFACE
22
ANTENNA INTERFACE
34
a b c
34
a b c
23
23

FIG. 3

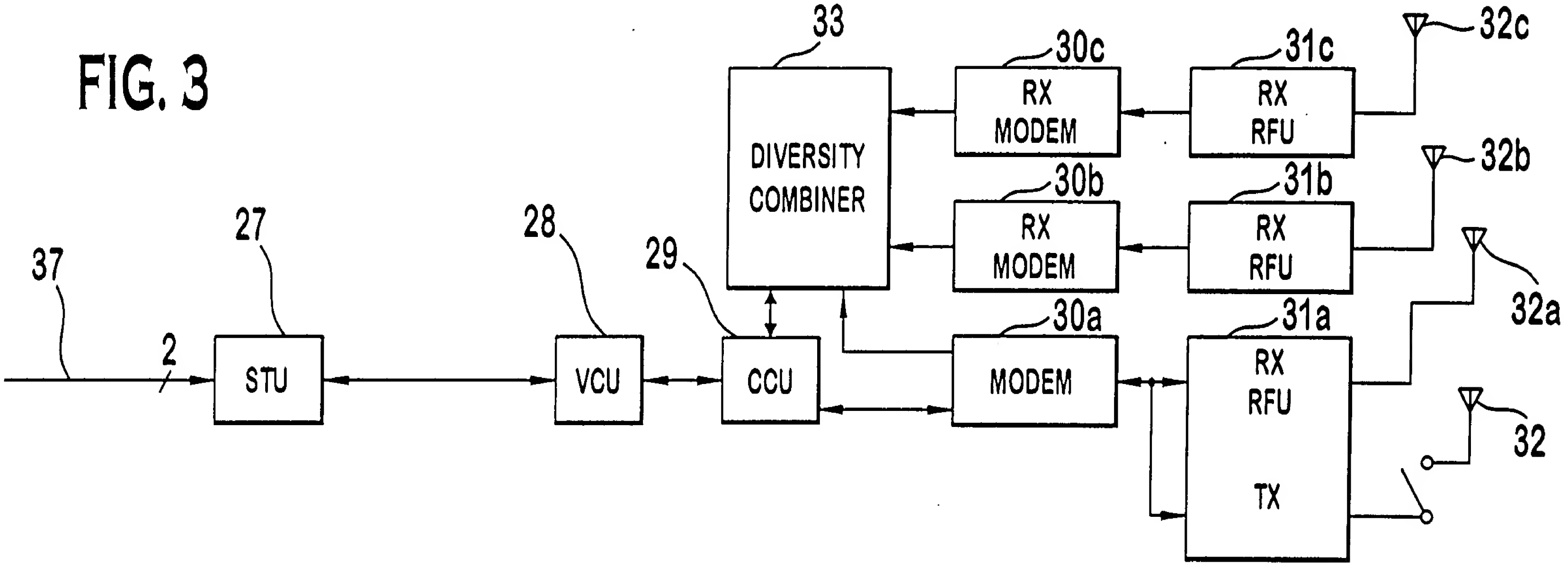

37
2
27
STU
28
VCU
29
CCU
33
DIVERSITY COMBINER
30c
RX MODEM
30b
RX MODEM
30a
MODEM
31c
RX RFU
31b
RX RFU
31a
RX RFU
TX
32c
32b
32a
32

FIG. 25

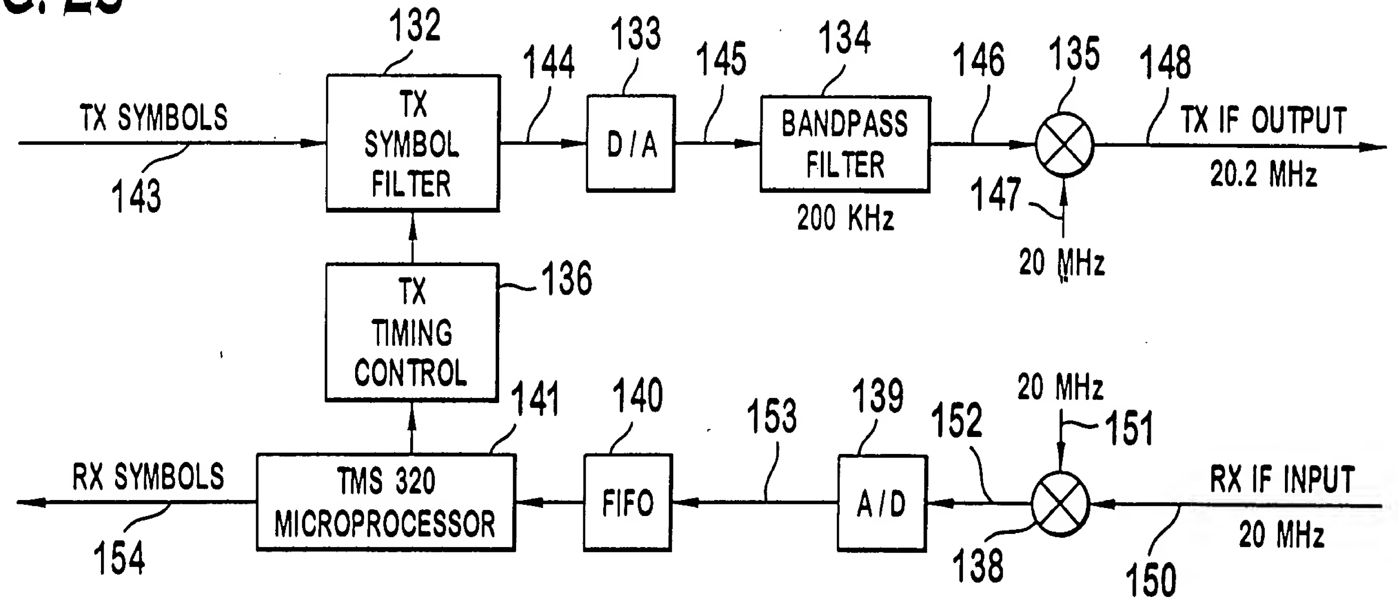

TX SYMBOLS
143
132
TX SYMBOL FILTER
144
133
D / A
145
134
BANDPASS FILTER
200 KHz
146
135
147
20 MHz
148
TX IF OUTPUT
20.2 MHz
136
TX TIMING CONTROL
RX SYMBOLS
154
141
TMS 320 MICROPROCESSOR
140
FIFO
153
139
A / D
152
138
20 MHz
151
RX IF INPUT
20 MHz
150

FIG. 4

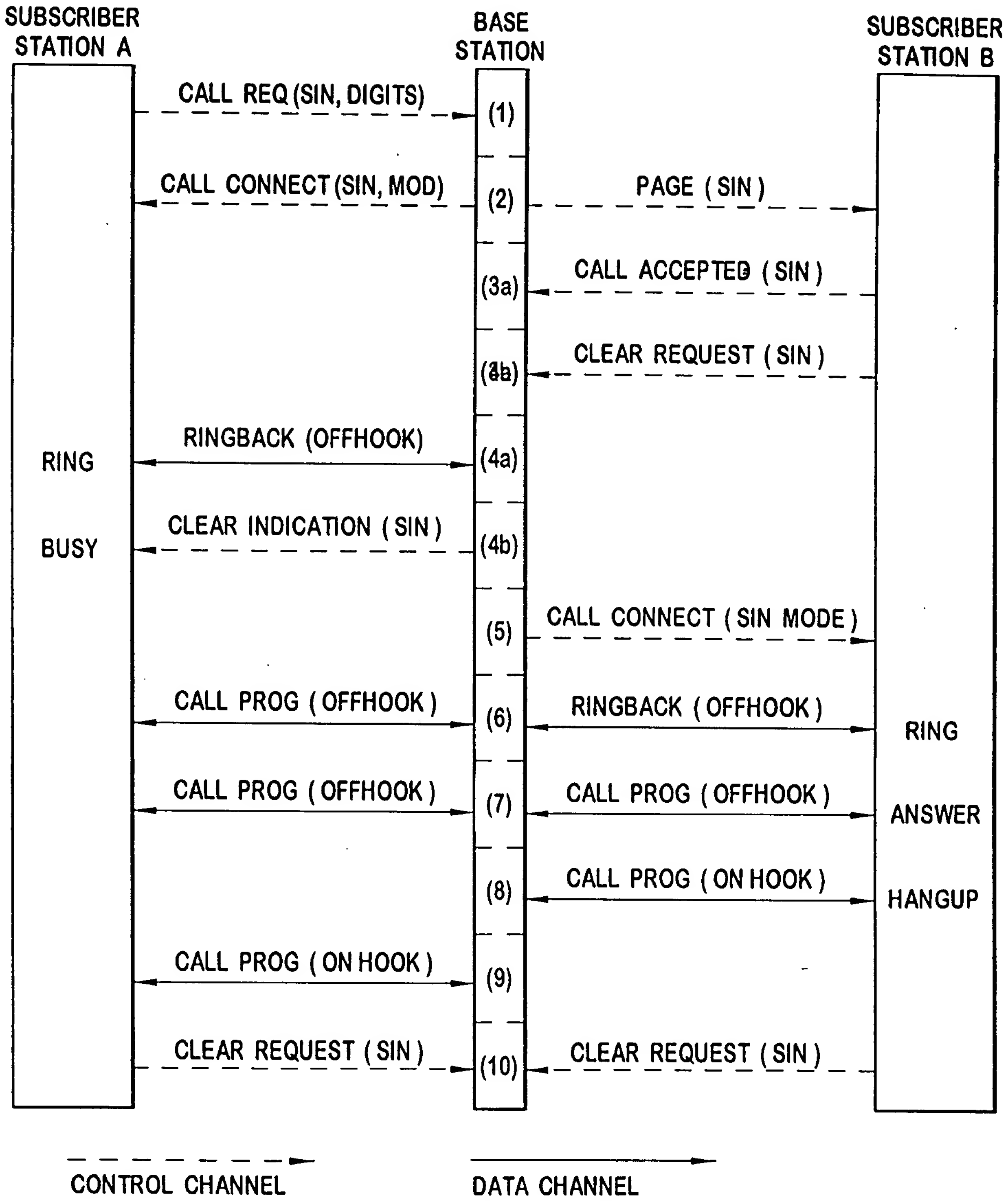

SUBSCRIBER STATION A
BASE STATION
SUBSCRIBER STATION B
CALL REQ (SIN, DIGITS)
(1)
CALL CONNECT (SIN, MOD)
(2)
PAGE (SIN)
(3a)
CALL ACCEPTED (SIN)
(3b)
CLEAR REQUEST (SIN)
RINGBACK (OFFHOOK)
RING
(4a)
CLEAR INDICATION (SIN)
BUSY
(4b)
(5)
CALL CONNECT (SIN MODE)
CALL PROG (OFFHOOK)
(6)
RINGBACK (OFFHOOK)
RING
CALL PROG (OFFHOOK)
(7)
CALL PROG (OFFHOOK)
ANSWER
(8)
CALL PROG (ON HOOK)
HANGUP
CALL PROG (ON HOOK)
(9)
CLEAR REQUEST (SIN)
(10)
CLEAR REQUEST (SIN)
CONTROL CHANNEL
DATA CHANNEL

FIG. 6

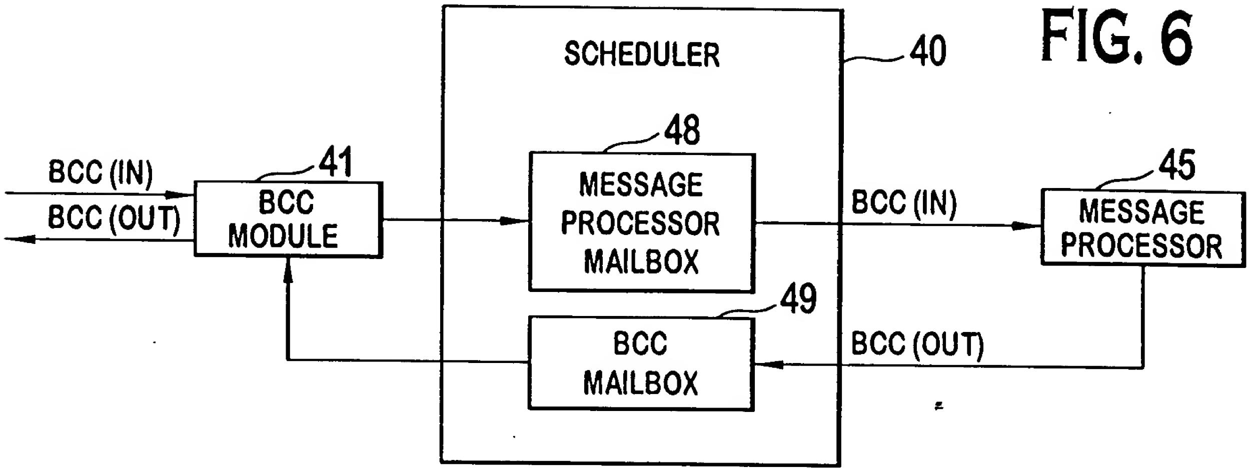


FIG. 7

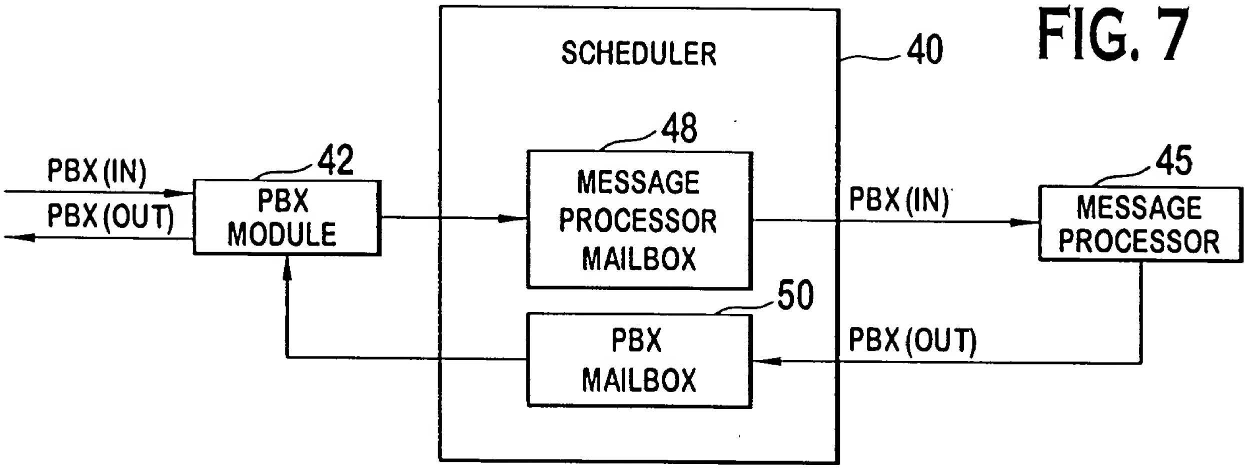


FIG. 8

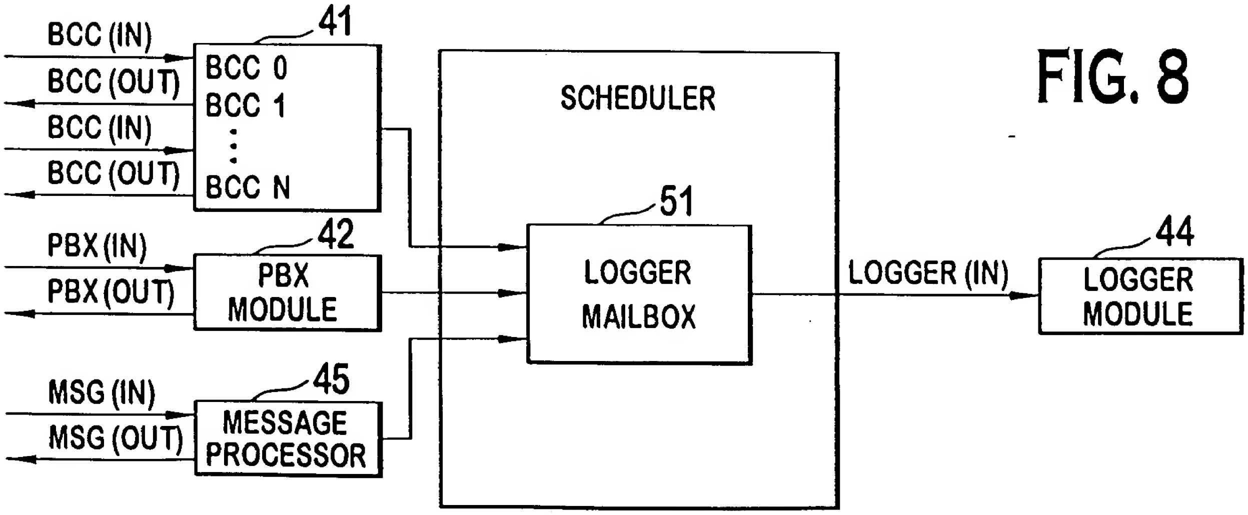


FIG. 9

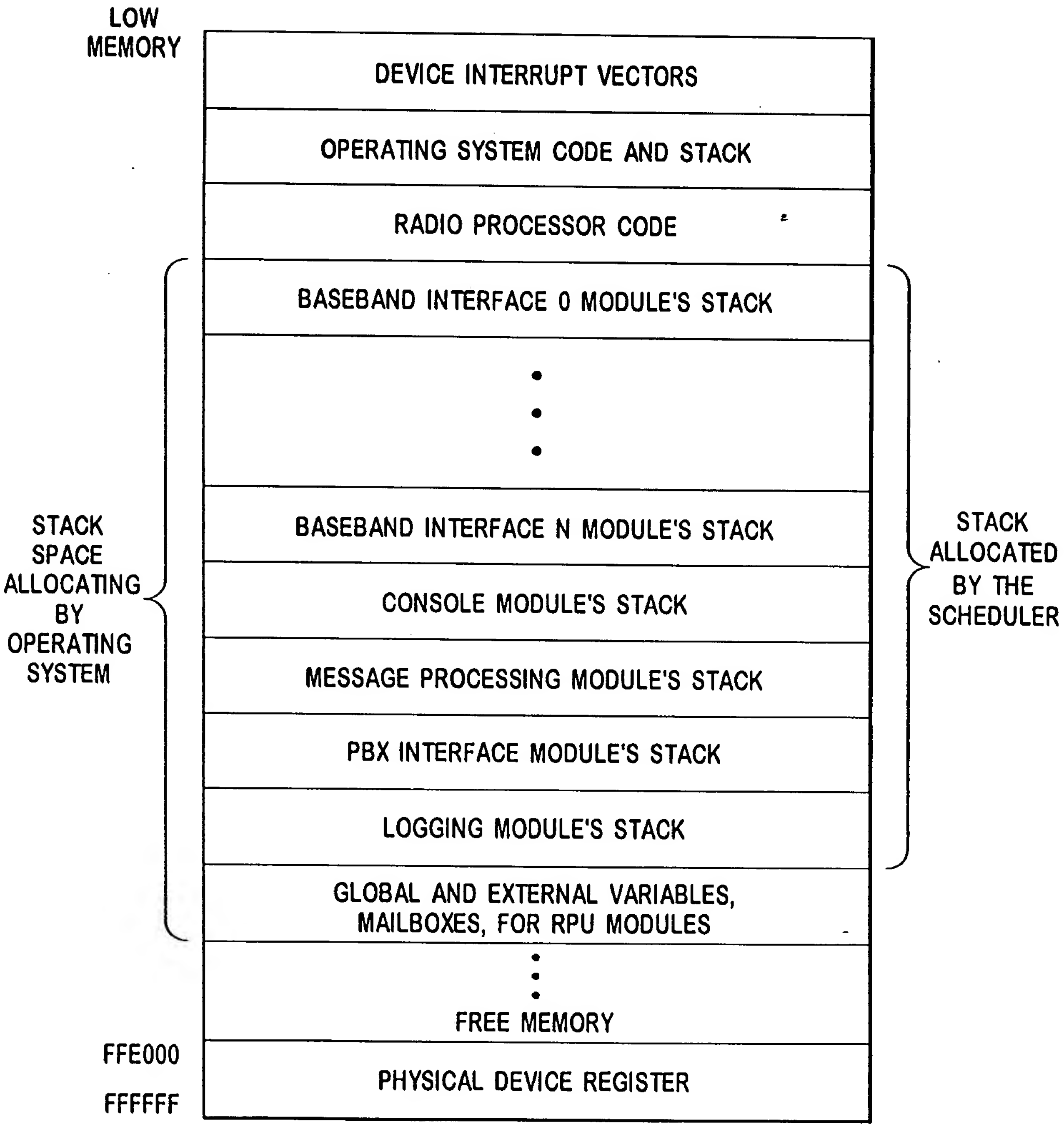
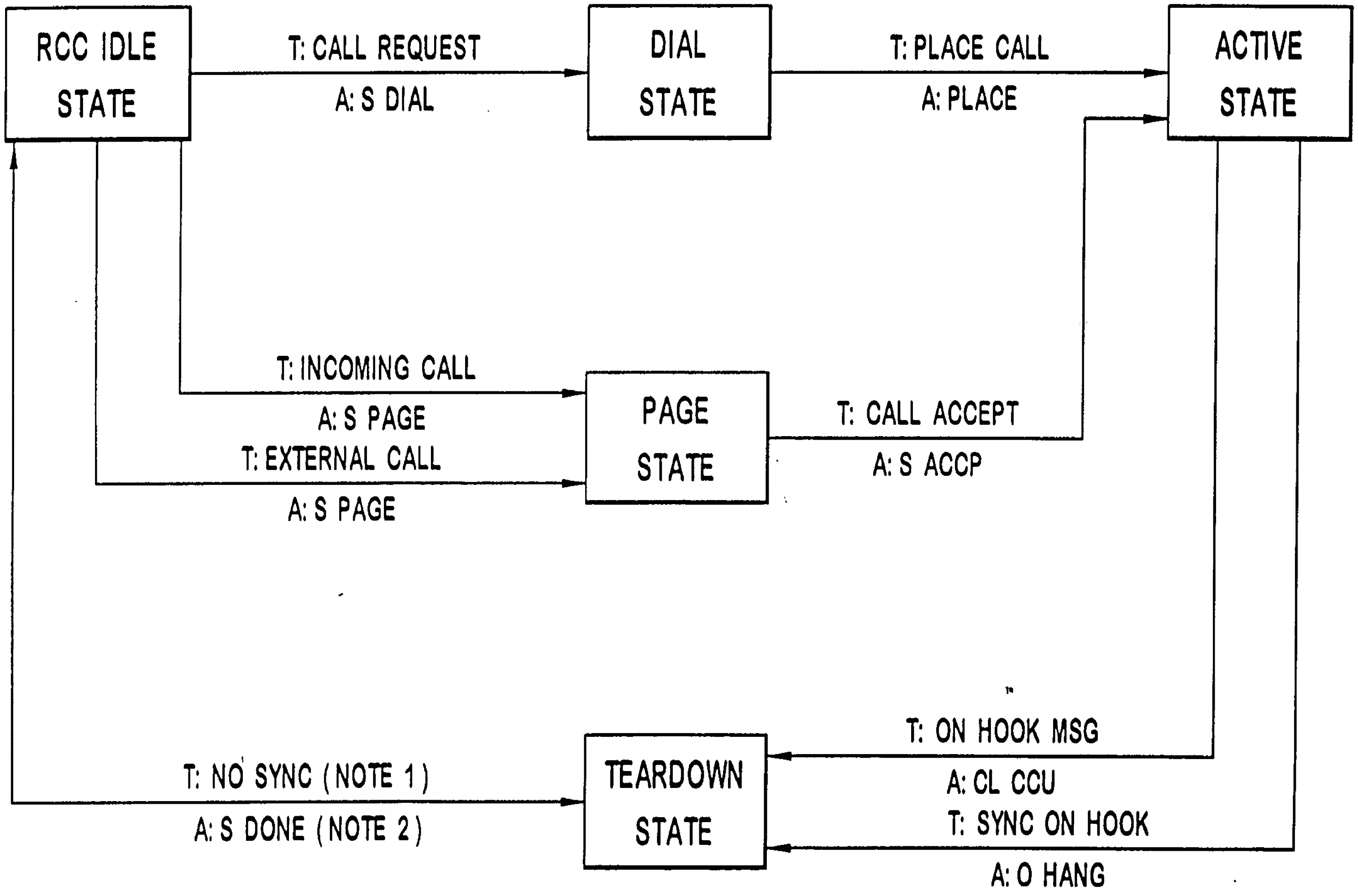

LOW MEMORY
DEVICE INTERRUPT VECTORS
OPERATING SYSTEM CODE AND STACK
RADIO PROCESSOR CODE
BASEBAND INTERFACE 0 MODULE'S STACK
BASEBAND INTERFACE N MODULE'S STACK
CONSOLE MODULE'S STACK
MESSAGE PROCESSING MODULE'S STACK
PBX INTERFACE MODULE'S STACK
LOGGING MODULE'S STACK
GLOBAL AND EXTERNAL VARIABLES, MAILBOXES, FOR RPU MODULES
FREE MEMORY
PHYSICAL DEVICE REGISTER
FFE000
FFFFFF
STACK SPACE ALLOCATING BY OPERATING SYSTEM
STACK ALLOCATED BY THE SCHEDULER

FIG. 10


RCC IDLE STATE
T: CALL REQUEST
A: S DIAL
DIAL STATE
T: PLACE CALL
A: PLACE
ACTIVE STATE
T: INCOMING CALL
A: S PAGE
T: EXTERNAL CALL
A: S PAGE
PAGE STATE
T: CALL ACCEPT
A: S ACCP
T: NO SYNC (NOTE 1)
A: S DONE (NOTE 2)
TEARDOWN STATE
T: ON HOOK MSG
A: CL CCU
T: SYNC ON HOOK
A: O HANG

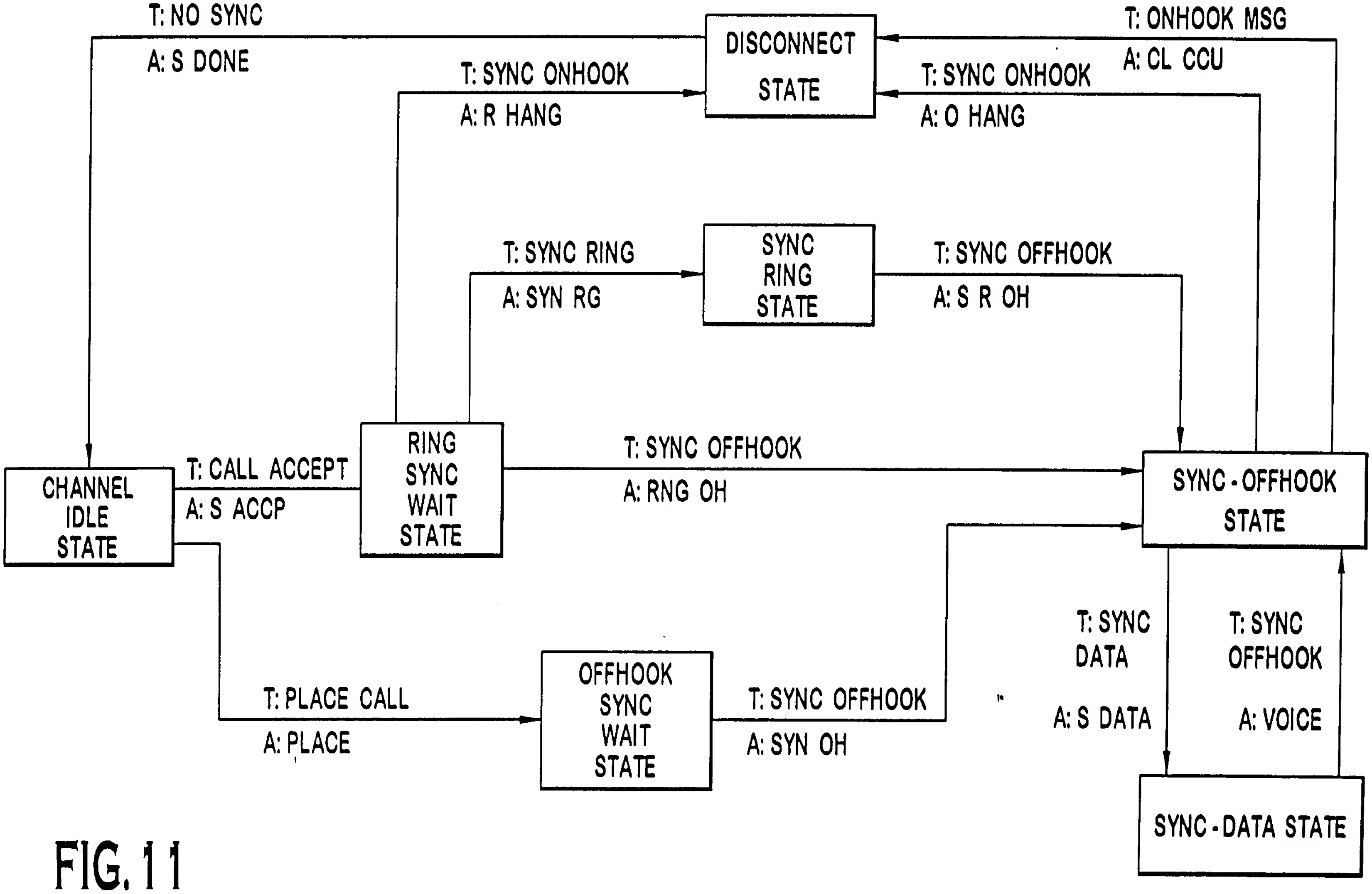
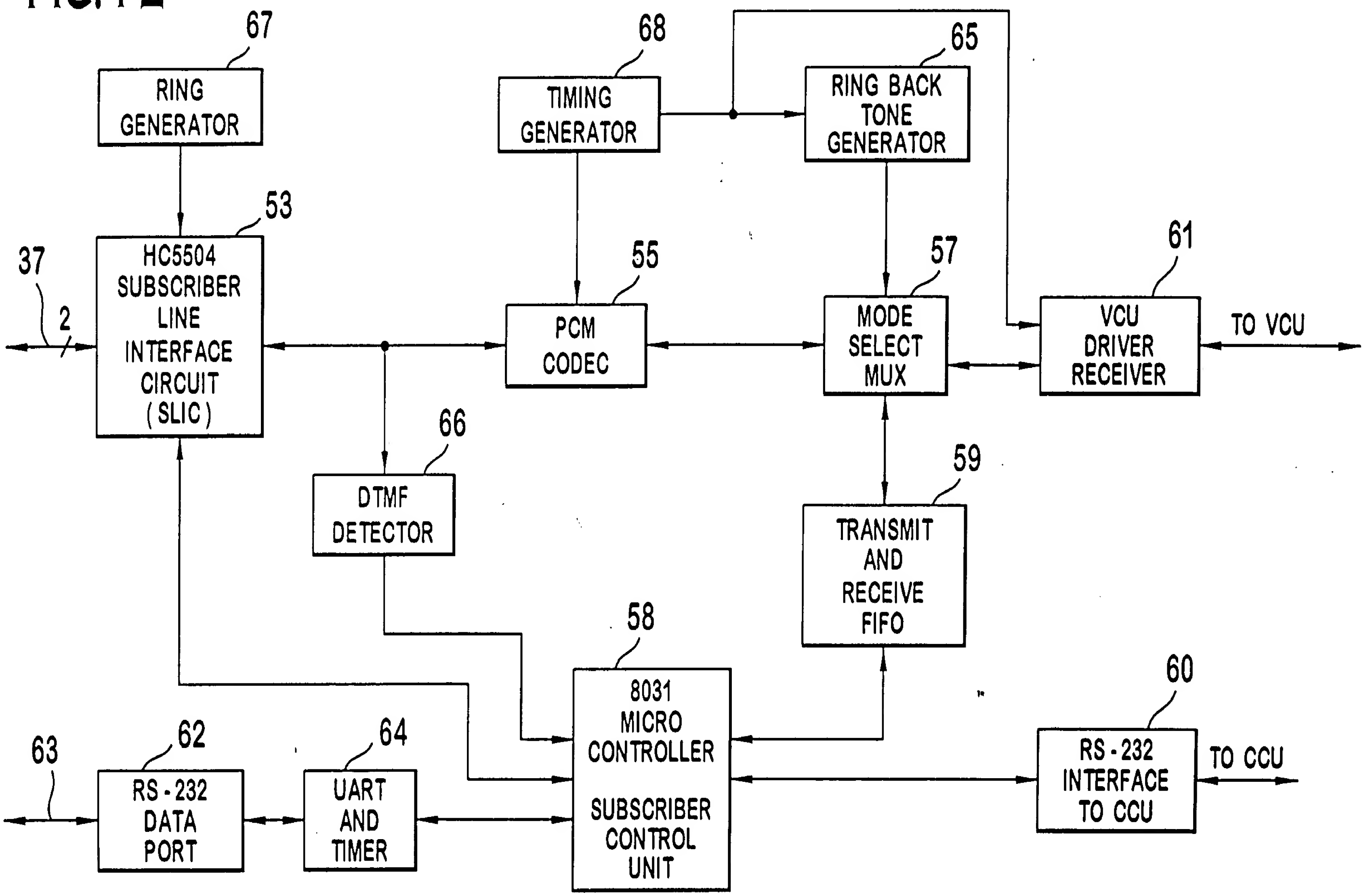

T: NO SYNC
A: S DONE
DISCONNECT STATE
T: ONHOOK MSG
A: CL CCU
T: SYNC ONHOOK
A: R HANG
T: SYNC ONHOOK
A: O HANG
T: SYNC RING
A: SYN RG
SYNC RING STATE
T: SYNC OFFHOOK
A: S R OH
CHANNEL IDLE STATE
T: CALL ACCEPT
A: S ACCP
RING SYNC WAIT STATE
T: SYNC OFFHOOK
A: RNG OH
SYNC-OFFHOOK STATE
T: PLACE CALL
A: PLACE
OFFHOOK SYNC WAIT STATE
T: SYNC OFFHOOK
A: SYN OH
T: SYNC DATA
A: S DATA
T: SYNC OFFHOOK
A: VOICE
SYNC-DATA STATE

FIG. 11

FIG. 12


67
RING GENERATOR
68
TIMING GENERATOR
65
RING BACK TONE GENERATOR
37
2
53
HC5504 SUBSCRIBER LINE INTERFACE CIRCUIT (SLIC)
55
PCM CODEC
57
MODE SELECT MUX
61
VCU DRIVER RECEIVER
TO VCU
66
DTMF DETECTOR
59
TRANSMIT AND RECEIVE FIFO
58
8031 MICRO CONTROLLER
SUBSCRIBER CONTROL UNIT
60
RS-232 INTERFACE TO CCU
TO CCU
63
62
RS-232 DATA PORT
64
UART AND TIMER

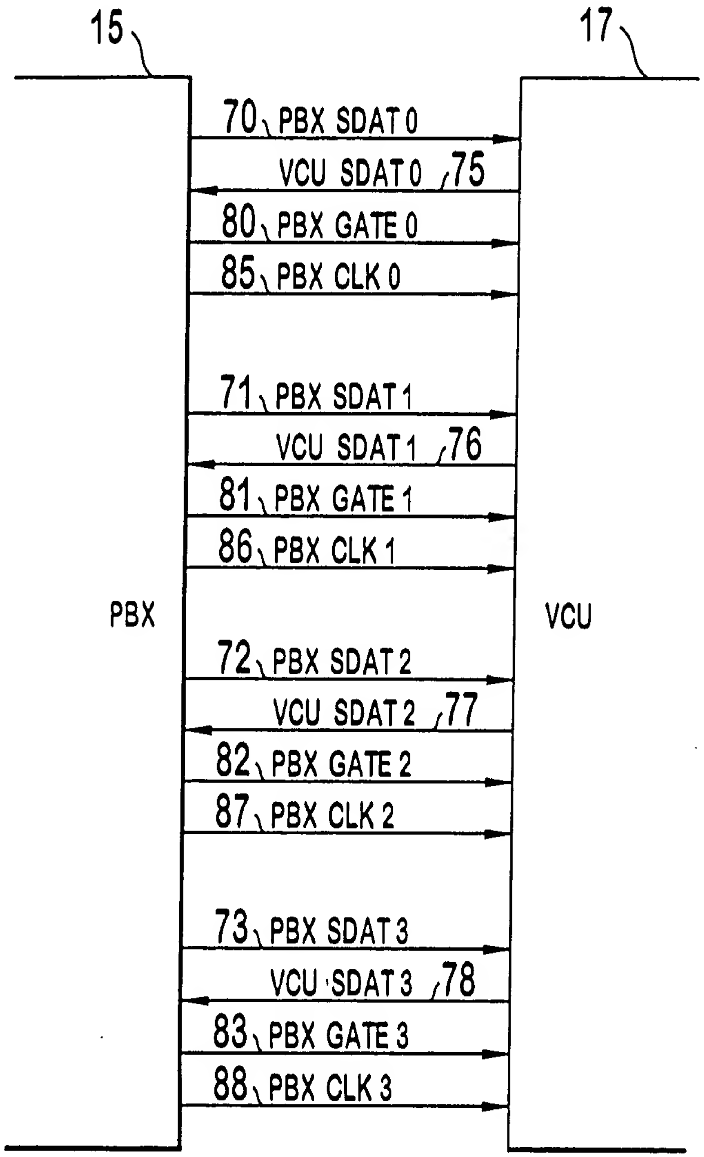

15
17
PBX
VCU
70 PBX SDAT 0
VCU SDAT 0 75
80 PBX GATE 0
85 PBX CLK 0
71 PBX SDAT 1
VCU SDAT 1 76
81 PBX GATE 1
86 PBX CLK 1
72 PBX SDAT 2
VCU SDAT 2 77
82 PBX GATE 2
87 PBX CLK 2
73 PBX SDAT 3
VCU SDAT 3 78
83 PBX GATE 3
88 PBX CLK 3

FIG. 13

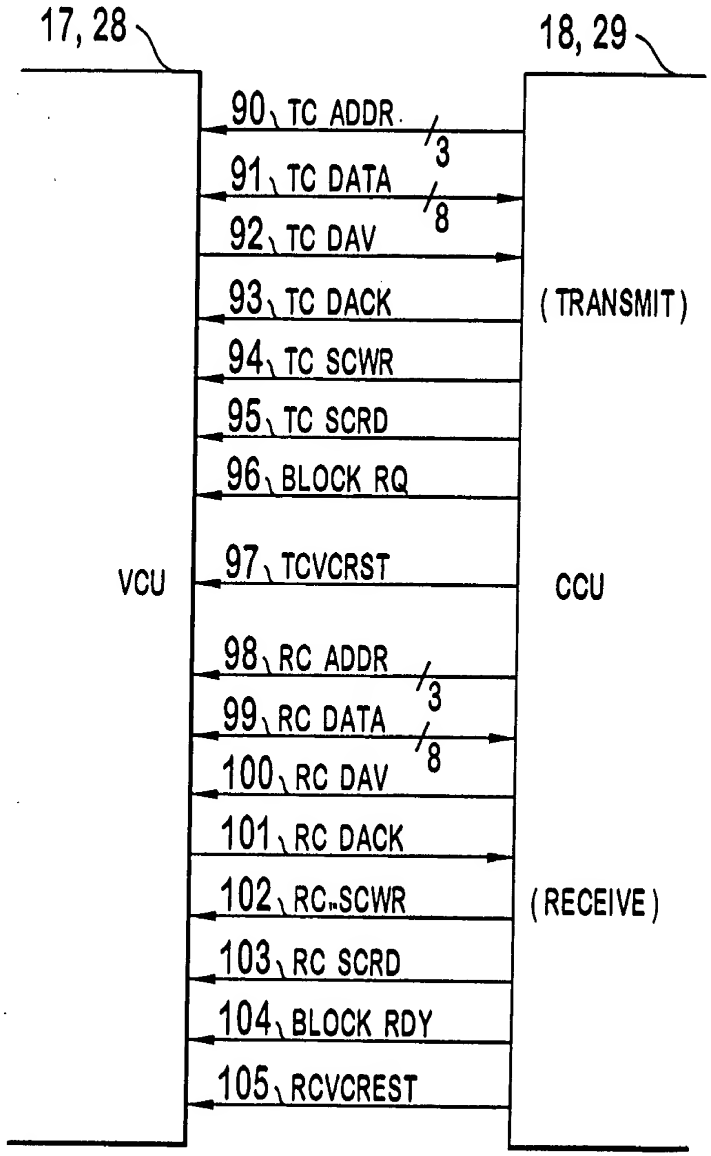
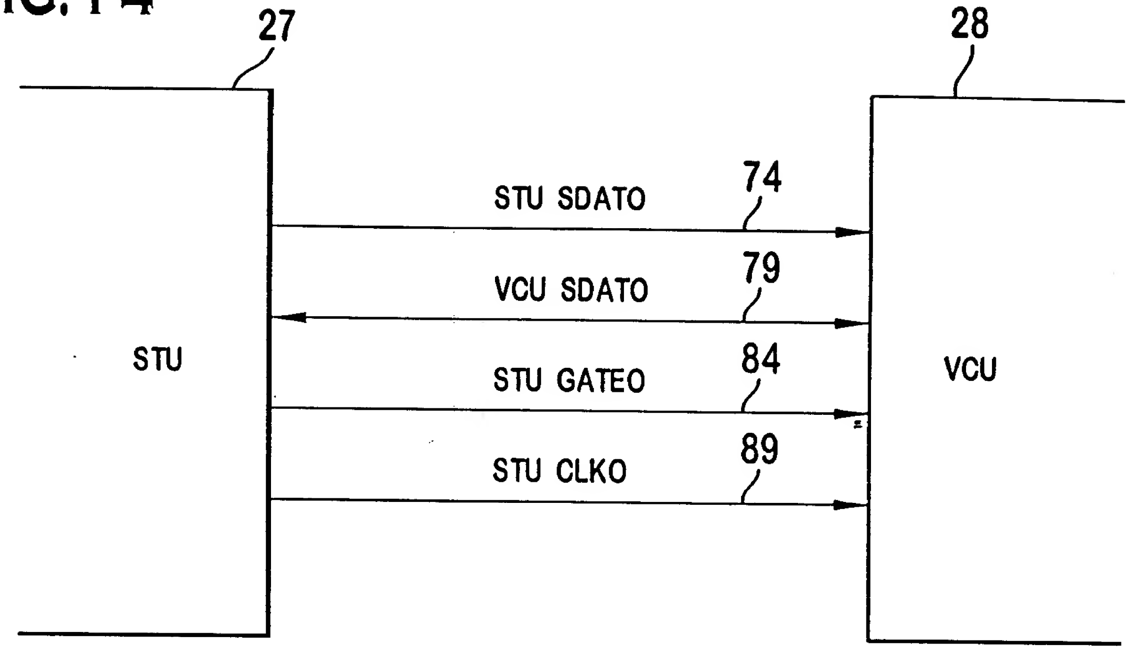

17, 28
18, 29
VCU
CCU
(TRANSMIT)
(RECEIVE)
90 TC ADDR
3
91 TC DATA
8
92 TC DAV
93 TC DACK
94 TC SCWR
95 TC SCRD
96 BLOCK RQ
97 TCVCRST
98 RC ADDR
3
99 RC DATA
8
100 RC DAV
101 RC DACK
102 RC SCWR
103 RC SCRD
104 BLOCK RDY
105 RCVCREST

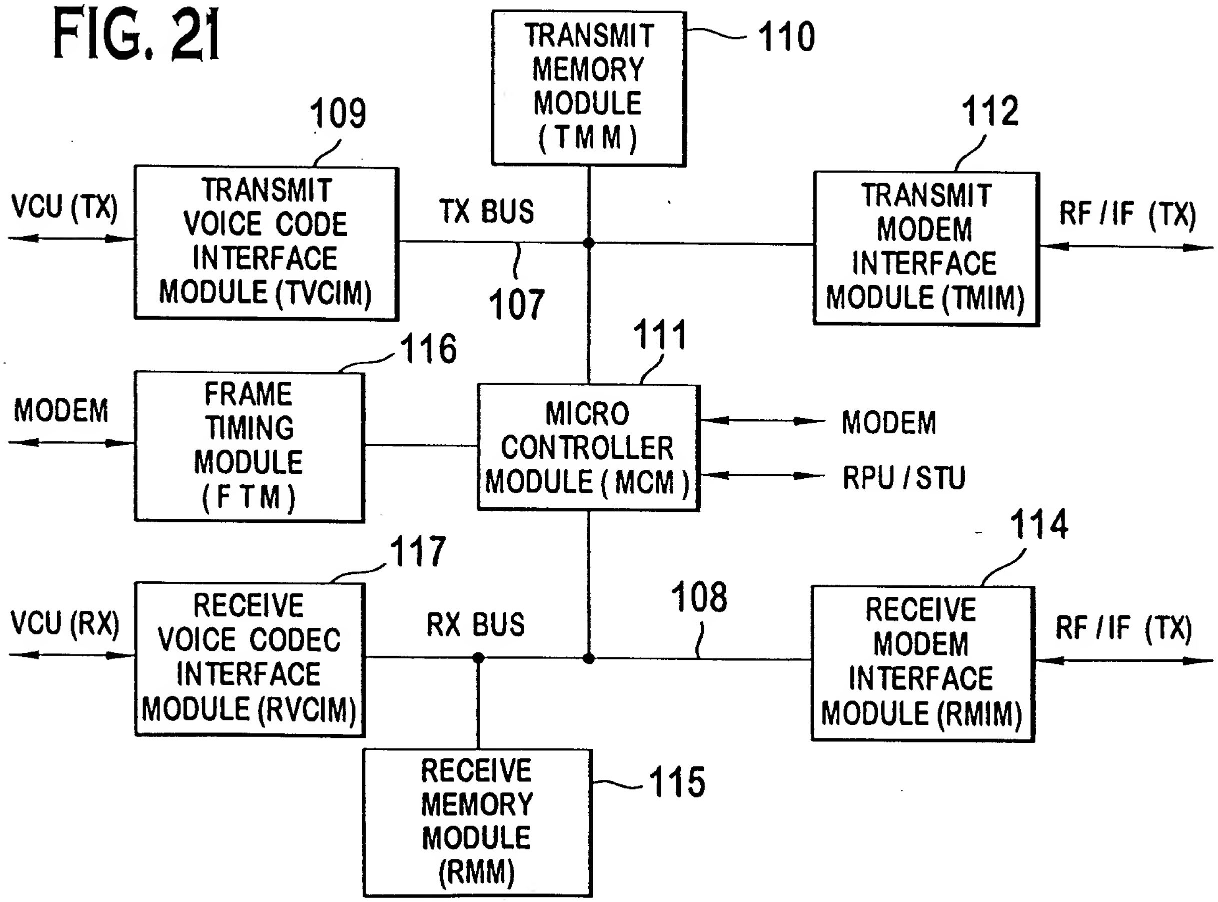
FIG. 16

FIG. 14



27
28
STU
VCU
STU SDATO
74
VCU SDATO
79
STU GATEO
84
STU CLKO
89

FIG. 21



TRANSMIT MEMORY MODULE (TMM)
110
109
112
VCU (TX)
TRANSMIT VOICE CODE INTERFACE MODULE (TVCIM)
TX BUS
107
TRANSMIT MODEM INTERFACE MODULE (TMIM)
RF / IF (TX)
116
111
MODEM
FRAME TIMING MODULE (FTM)
MICRO CONTROLLER MODULE (MCM)
MODEM
RPU / STU
117
114
108
VCU (RX)
RECEIVE VOICE CODEC INTERFACE MODULE (RVCIM)
RX BUS
RECEIVE MODEM INTERFACE MODULE (RMIM)
RF / IF (TX)
RECEIVE MEMORY MODULE (RMM)
115

FIG. 15

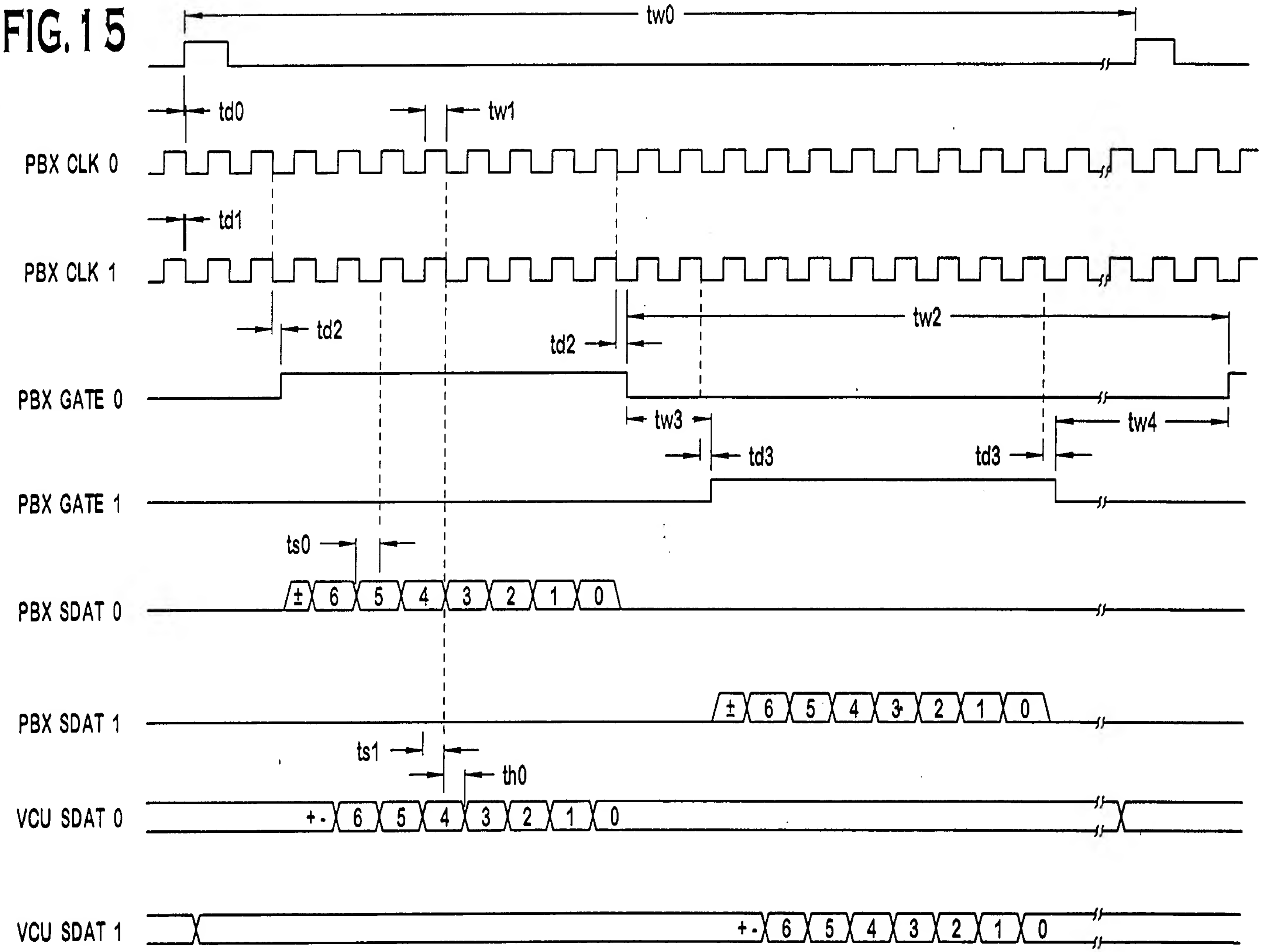

tw0
td0
tw1
PBX CLK 0
td1
PBX CLK 1
td2
td2
tw2
PBX GATE 0
tw3
td3
td3
tw4
PBX GATE 1
ts0
± 6 5 4 3 2 1 0
PBX SDAT 0
± 6 5 4 3 2 1 0
PBX SDAT 1
ts1
th0
+- 6 5 4 3 2 1 0
VCU SDAT 0
+- 6 5 4 3 2 1 0
VCU SDAT 1

FIG. 17

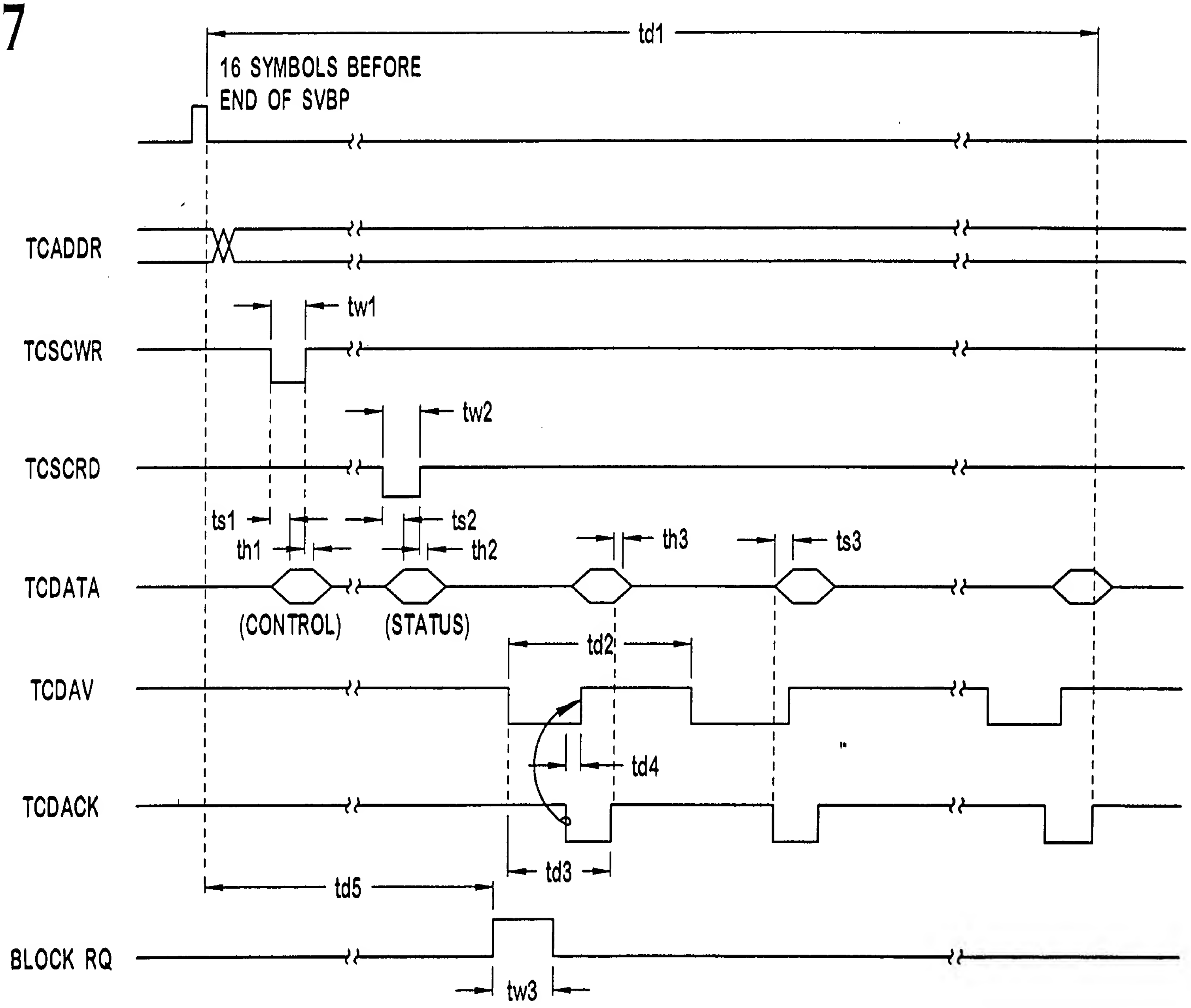
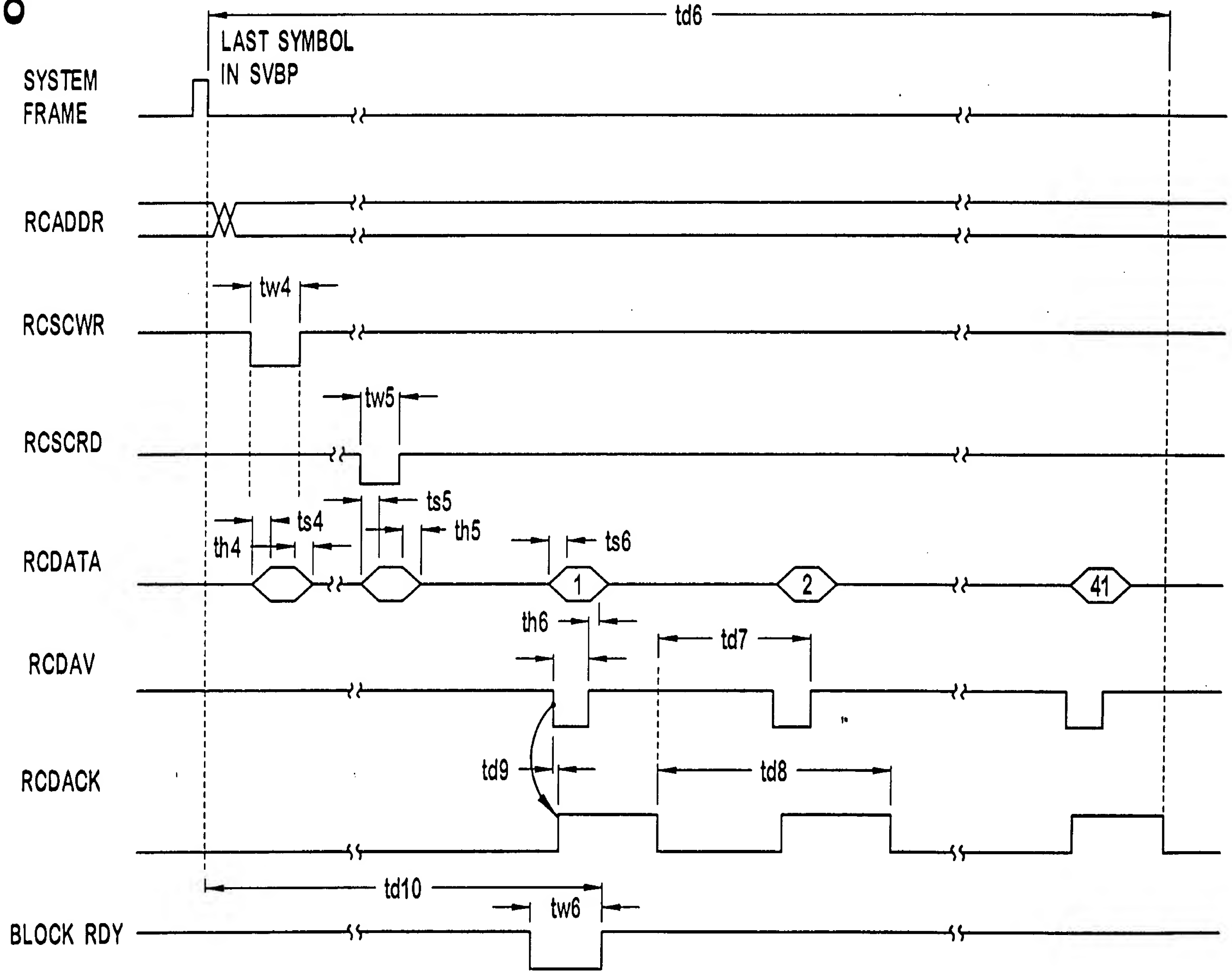

td1
16 SYMBOLS BEFORE END OF SVBP
TCADDR
tw1
TCSCWR
tw2
TCSCRD
ts1
th1
ts2
th2
th3
ts3
TCDATA
(CONTROL)
(STATUS)
td2
TCDAV
td4
TCDACK
td3
td5
BLOCK RQ
tw3

FIG. 18


td6
LAST SYMBOL IN SVBP
SYSTEM FRAME
RCADDR
tw4
RCSCWR
tw5
RCSCRD
th4
ts4
ts5
th5
ts6
RCDATA
1
2
41
th6
td7
RCDAV
td9
td8
RCDACK
td10
tw6
BLOCK RDY

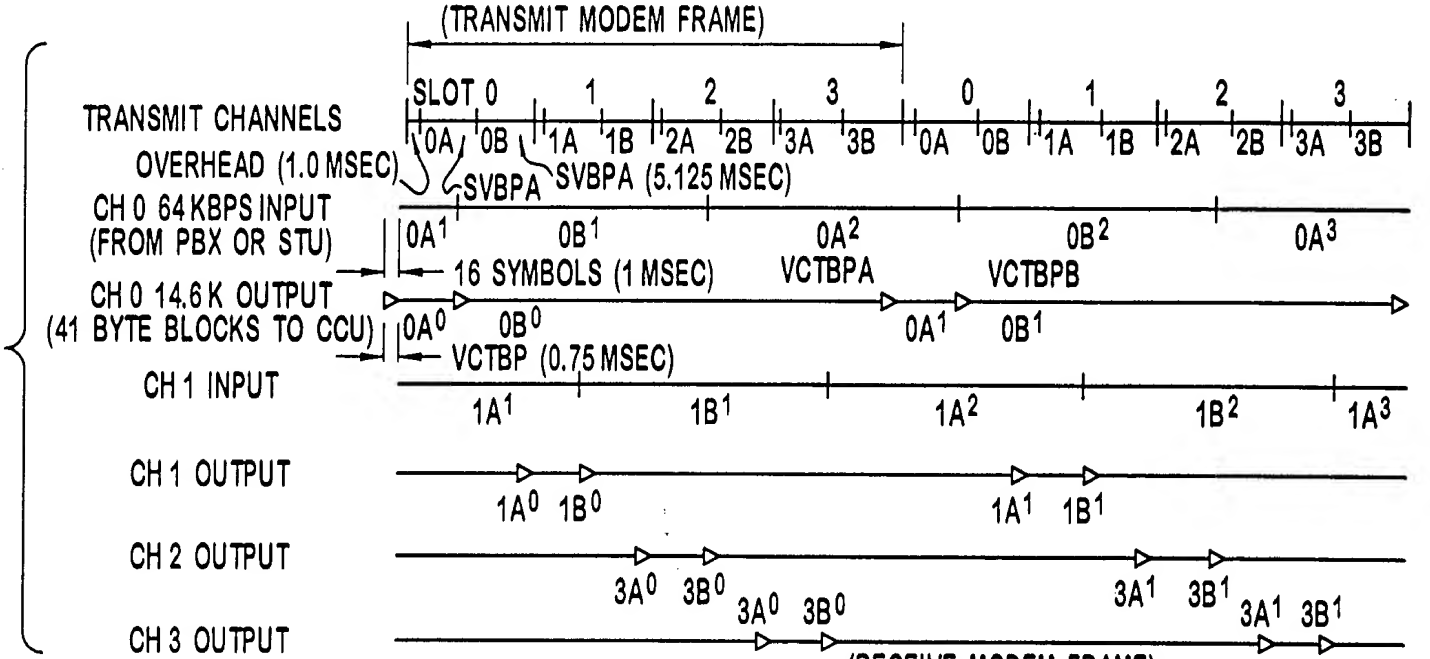


FIG. 19A

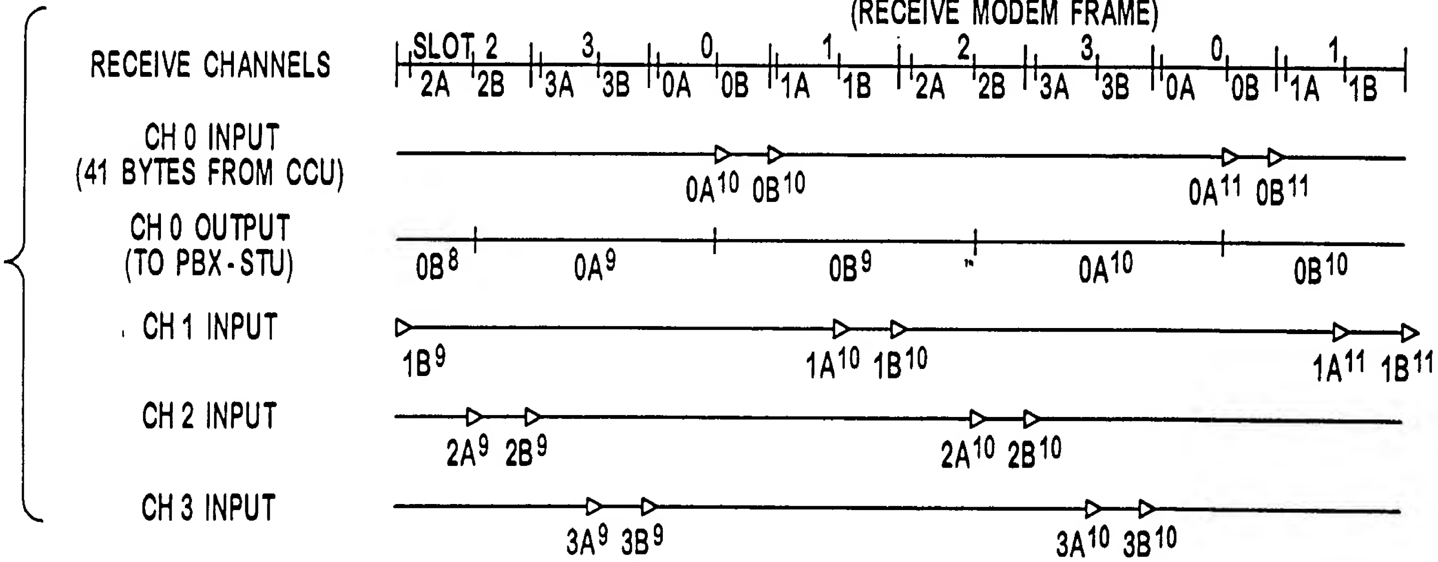


FIG. 19B

FIG. 20A

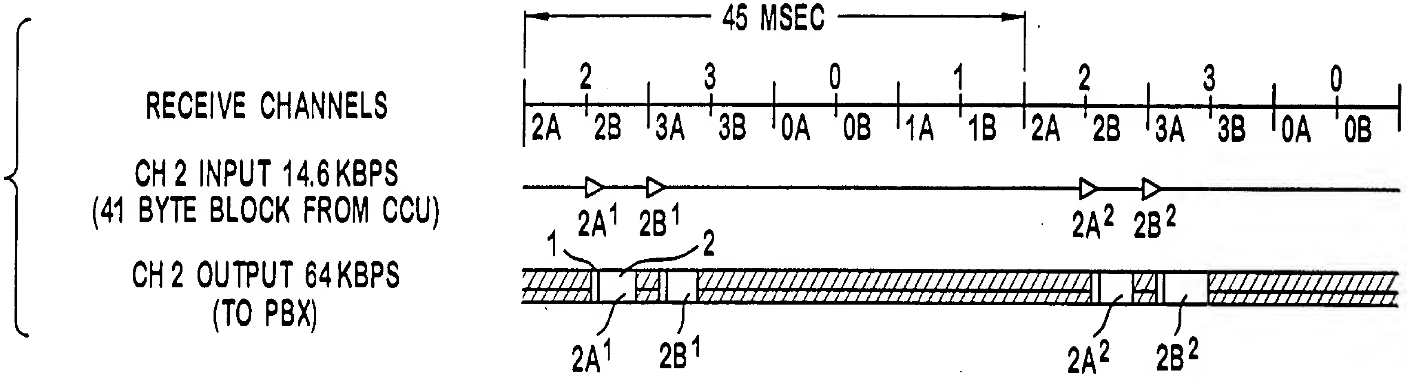


FIG. 20B

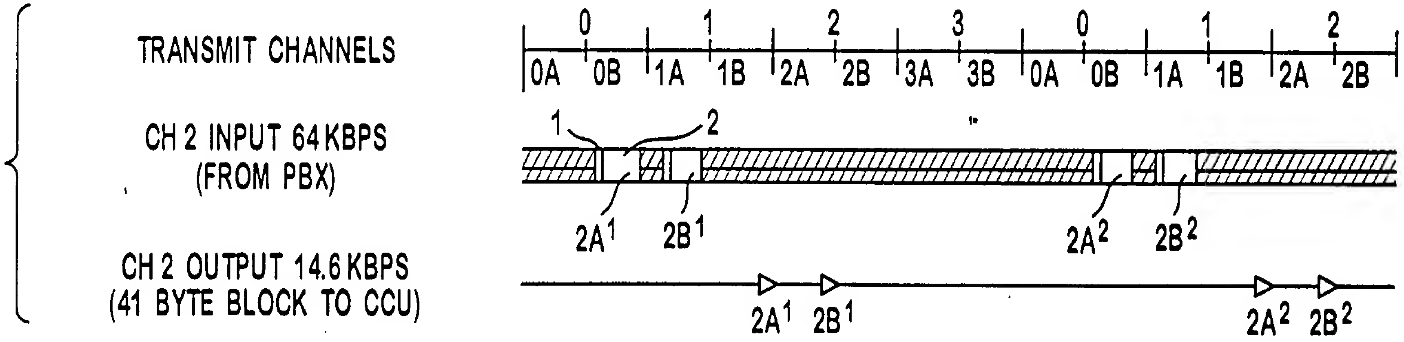
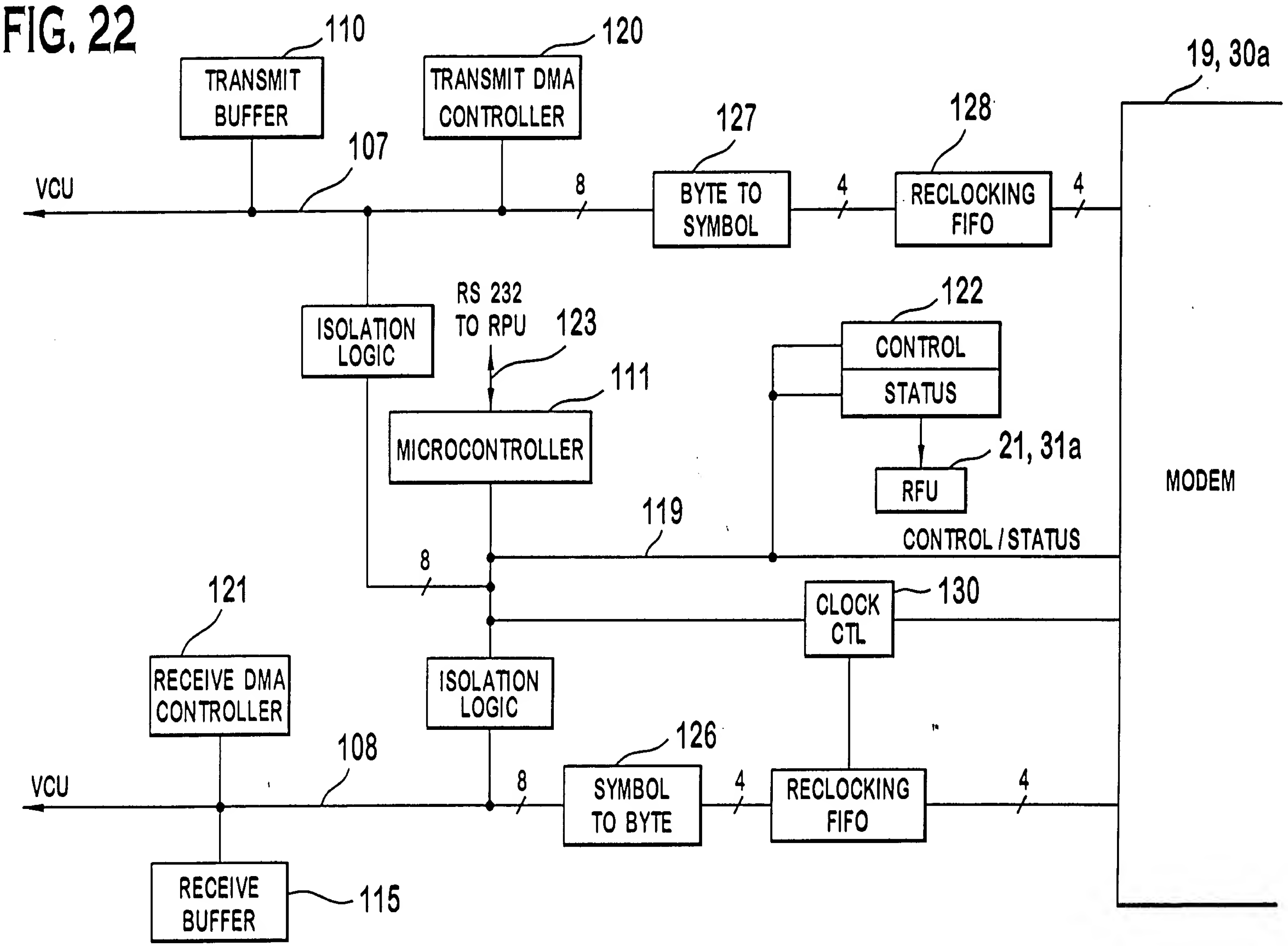


FIG. 22



110
TRANSMIT BUFFER
120
TRANSMIT DMA CONTROLLER
19, 30a
107
VCU
8
127
BYTE TO SYMBOL
4
128
RECLOCKING FIFO
4
ISOLATION LOGIC
RS 232 TO RPU
123
122
CONTROL
STATUS
111
MICROCONTROLLER
21, 31a
RFU
MODEM
119
CONTROL / STATUS
8
130
CLOCK CTL
121
RECEIVE DMA CONTROLLER
ISOLATION LOGIC
108
126
VCU
8
SYMBOL TO BYTE
4
RECLOCKING FIFO
4
RECEIVE BUFFER
115

FIG. 23

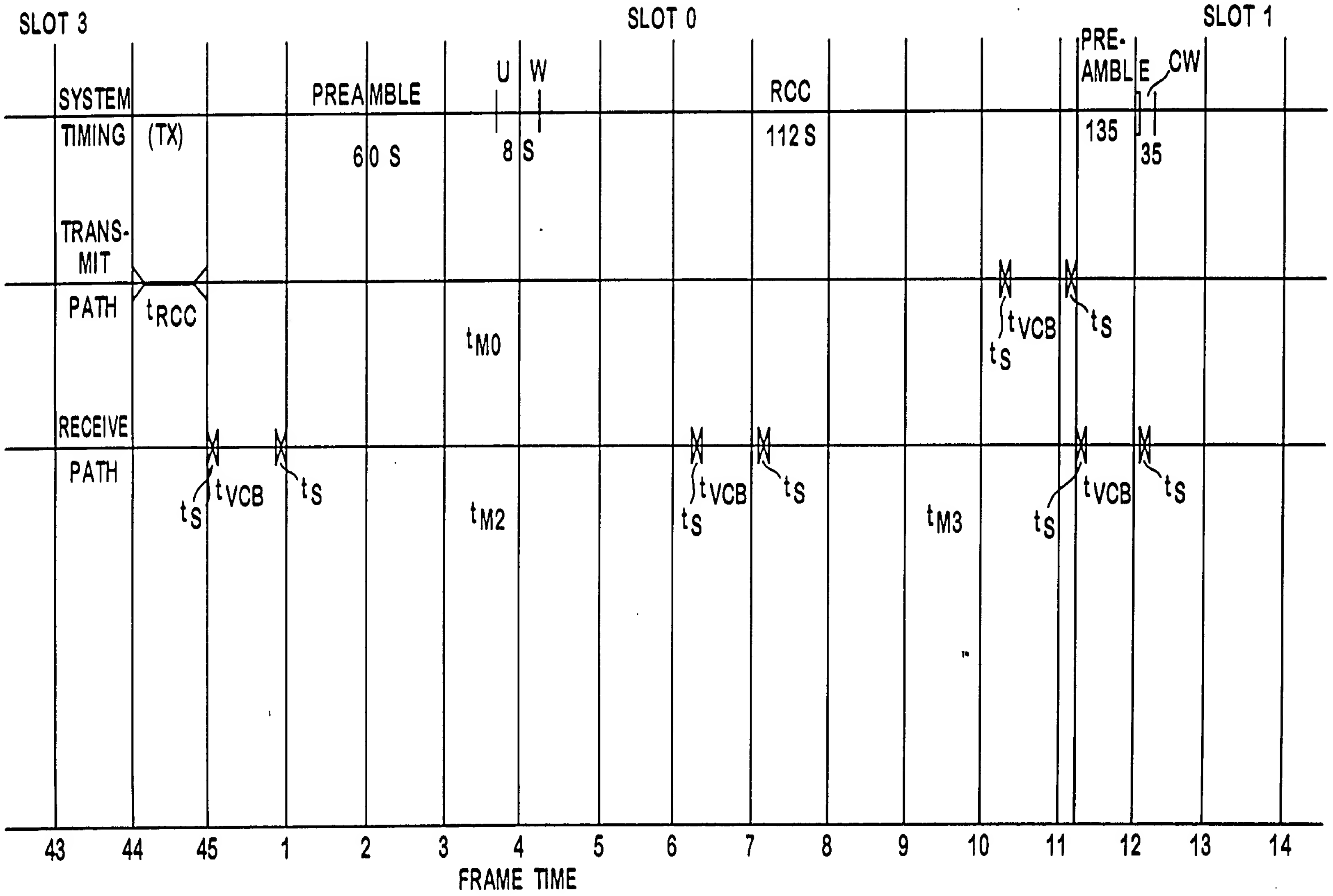
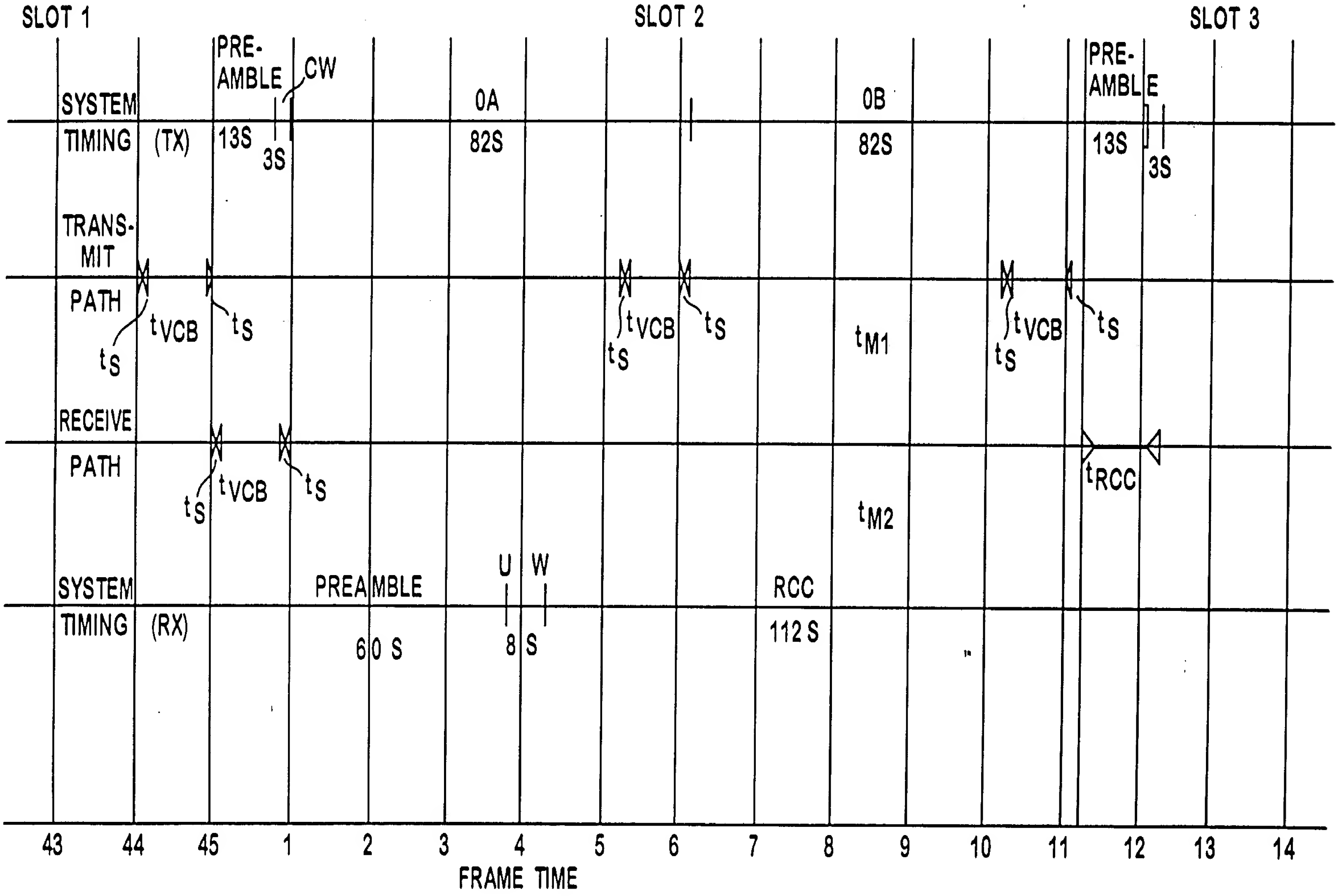

SLOT 3
SLOT 0
SLOT 1
SYSTEM TIMING
(TX)
PREAMBLE
60 S
U W
8 S
RCC
112 S
PRE-AMBLE
135
CW
35
TRANS-MIT PATH
tRCC
tM0
tS
tVCB
tS
RECEIVE PATH
tS
tVCB
tS
tM2
tS
tVCB
tS
tM3
tS
tVCB
tS
43
44
45
1
2
3
4
5
6
7
8
9
10
11
12
13
14
FRAME TIME

FIG. 24


SLOT 1
SLOT 2
SLOT 3
SYSTEM TIMING (TX)
PRE-AMBLE
13S
3S
CW
0A
82S
0B
82S
PRE-AMBLE
13S
3S
TRANS-MIT PATH
tS
tVCB
tS
tS
tVCB
tS
tM1
tS
tVCB
tS
RECEIVE PATH
tS
tVCB
tS
tRCC
tM2
SYSTEM TIMING (RX)
PREAMBLE
60 S
U W
8 S
RCC
112 S
43
44
45
1
2
3
4
5
6
7
8
9
10
11
12
13
14
FRAME TIME

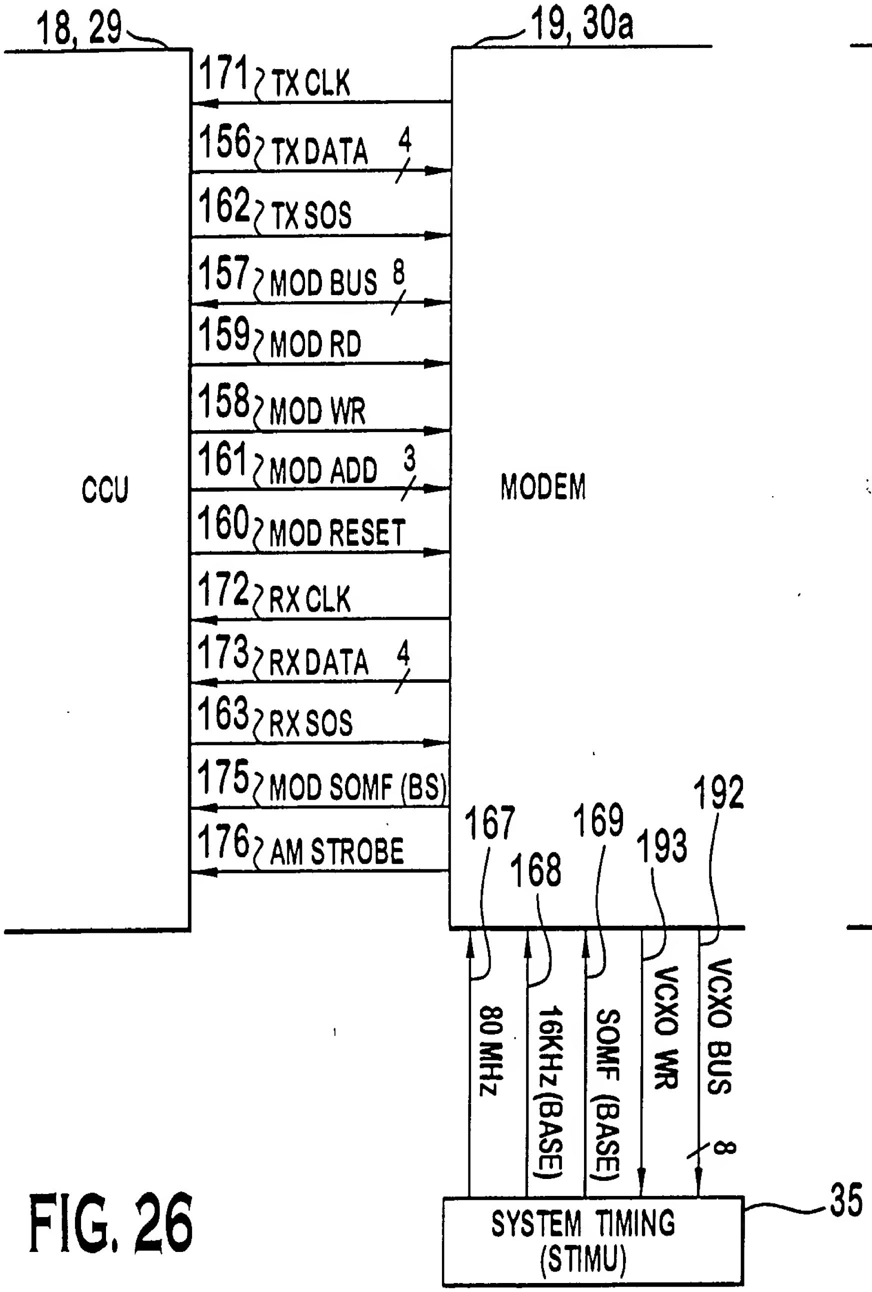

18, 29
CCU
19, 30a
MODEM
171 TX CLK
156 TX DATA 4
162 TX SOS
157 MOD BUS 8
159 MOD RD
158 MOD WR
161 MOD ADD 3
160 MOD RESET
172 RX CLK
173 RX DATA 4
163 RX SOS
175 MOD SOMF (BS)
176 AM STROBE
167
168
169
193
192
80 MHz
16KHz (BASE)
SOMF (BASE)
VCXO WR
VCXO BUS 8
SYSTEM TIMING
(STIMU)
35

FIG. 26

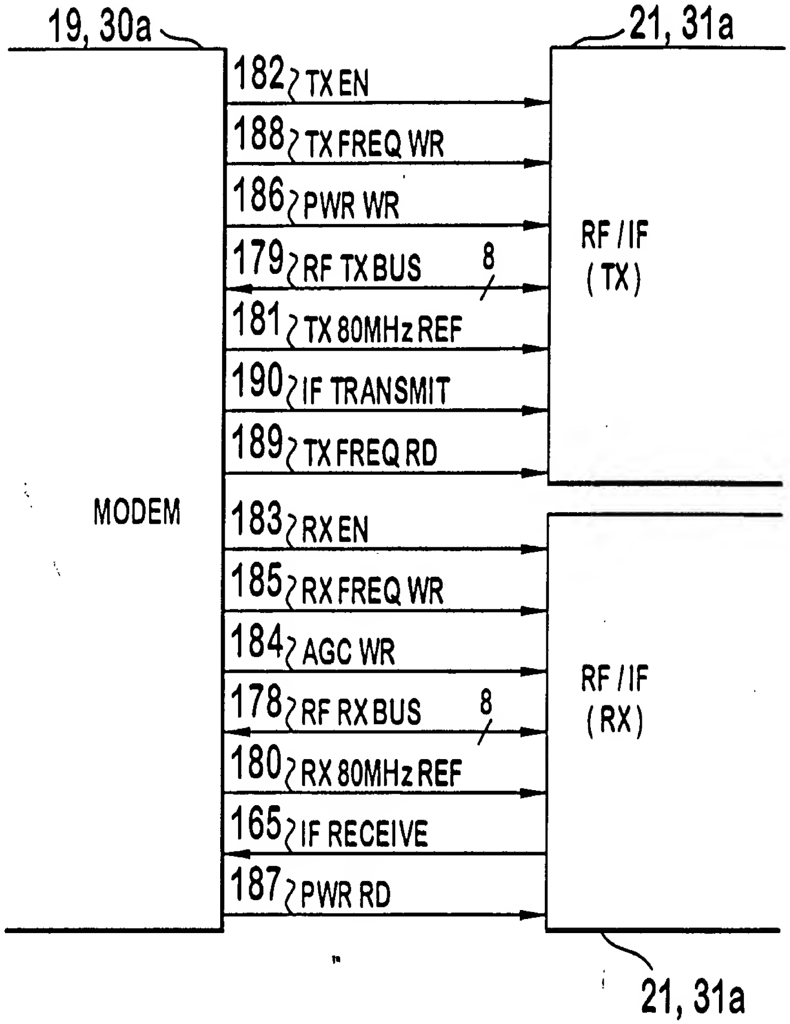

19, 30a
MODEM
21, 31a
RF / IF
(TX)
182 TX EN
188 TX FREQ WR
186 PWR WR
179 RF TX BUS 8
181 TX 80MHz REF
190 IF TRANSMIT
189 TX FREQ RD
183 RX EN
185 RX FREQ WR
184 AGC WR
178 RF RX BUS 8
180 RX 80MHz REF
165 IF RECEIVE
187 PWR RD
RF / IF
(RX)
21, 31a

FIG. 27

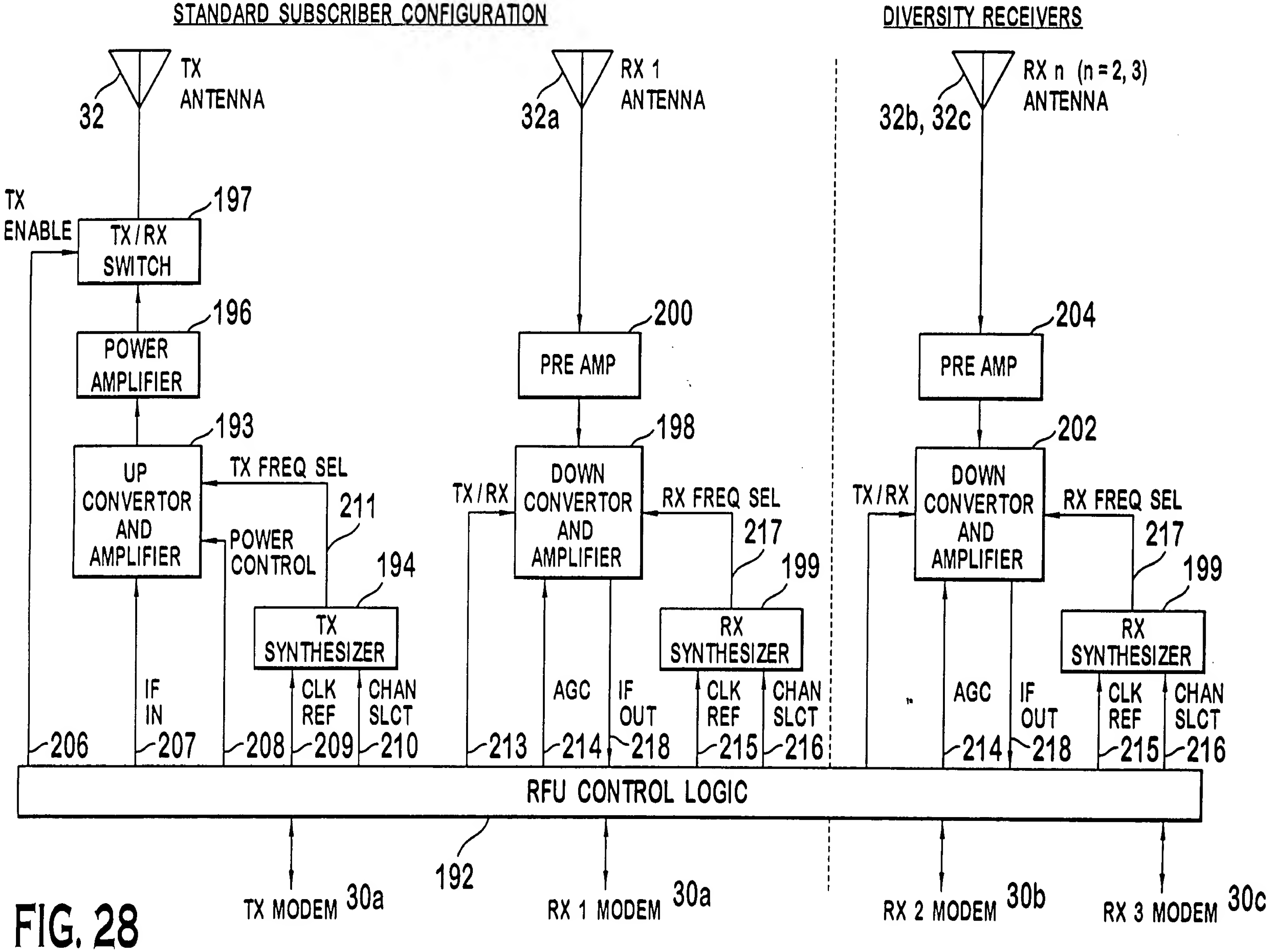

STANDARD SUBSCRIBER CONFIGURATION
DIVERSITY RECEIVERS
TX ANTENNA
32
RX 1 ANTENNA
32a
RX n (n = 2, 3) ANTENNA
32b, 32c
TX ENABLE
TX/RX SWITCH
197
POWER AMPLIFIER
196
UP CONVERTOR AND AMPLIFIER
193
TX FREQ SEL
211
POWER CONTROL
TX SYNTHESIZER
194
PRE AMP
200
PRE AMP
204
DOWN CONVERTOR AND AMPLIFIER
198
DOWN CONVERTOR AND AMPLIFIER
202
TX/RX
TX/RX
RX FREQ SEL
217
RX SYNTHESIZER
199
RX FREQ SEL
217
RX SYNTHESIZER
199
IF IN
CLK REF
CHAN SLCT
AGC
IF OUT
CLK REF
CHAN SLCT
AGC
IF OUT
CLK REF
CHAN SLCT
206
207
208
209
210
213
214
218
215
216
214
218
215
216
RFU CONTROL LOGIC
192
TX MODEM 30a
RX 1 MODEM 30a
RX 2 MODEM 30b
RX 3 MODEM 30c

FIG. 28

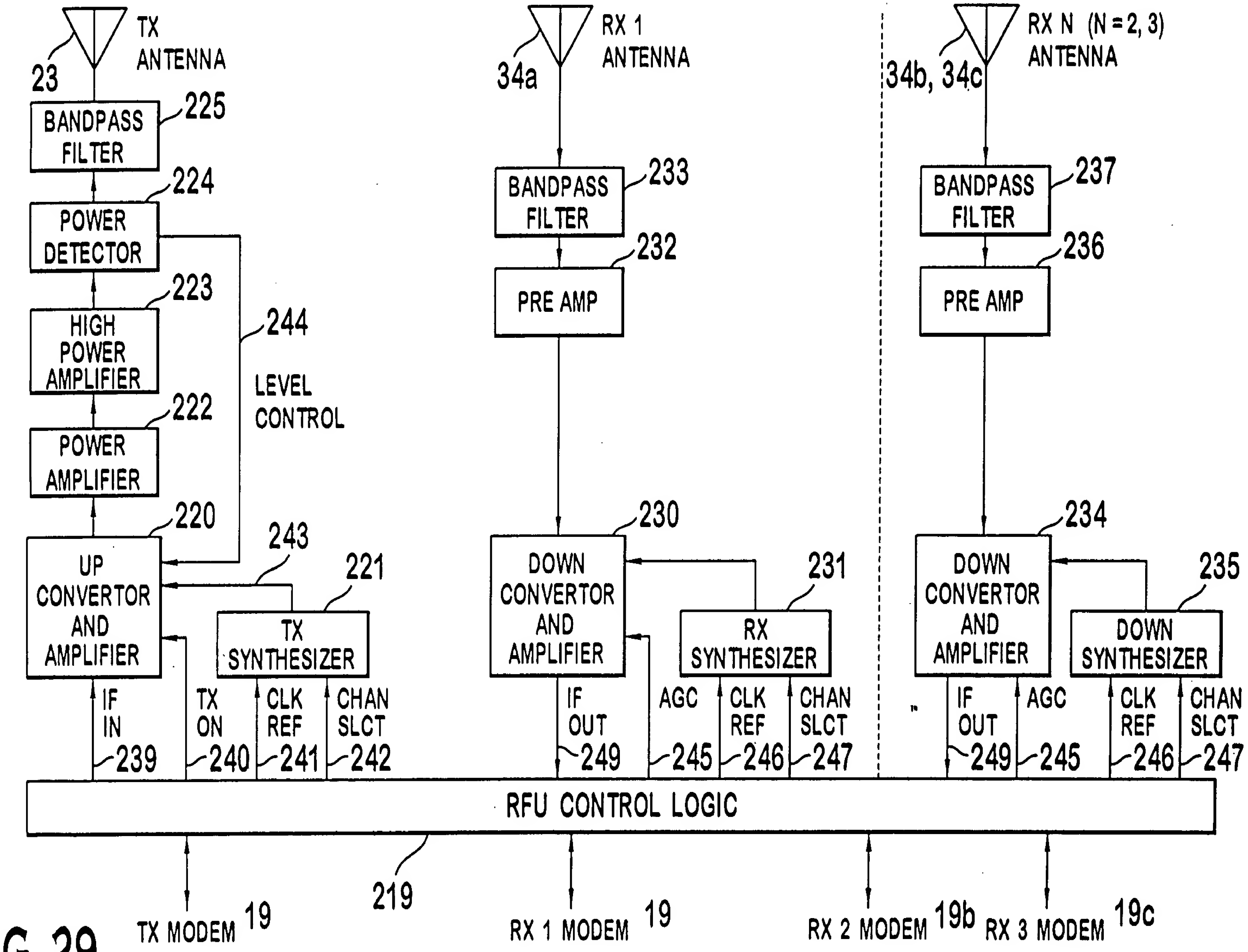

23
TX ANTENNA
BANDPASS FILTER
225
POWER DETECTOR
224
HIGH POWER AMPLIFIER
223
POWER AMPLIFIER
222
UP CONVERTOR AND AMPLIFIER
220
244
LEVEL CONTROL
243
TX SYNTHESIZER
221
IF IN
239
TX ON
240
CLK REF
241
CHAN SLCT
242
34a
RX 1 ANTENNA
BANDPASS FILTER
233
PRE AMP
232
DOWN CONVERTOR AND AMPLIFIER
230
RX SYNTHESIZER
231
IF OUT
249
AGC
245
CLK REF
246
CHAN SLCT
247
34b, 34c
RX N (N=2, 3) ANTENNA
BANDPASS FILTER
237
PRE AMP
236
DOWN CONVERTOR AND AMPLIFIER
234
DOWN SYNTHESIZER
235
IF OUT
249
AGC
245
CLK REF
246
CHAN SLCT
247
RFU CONTROL LOGIC
219
TX MODEM
19
RX 1 MODEM
19
RX 2 MODEM
19b
RX 3 MODEM
19c

FIG. 29